REMARKS

Claims 55-68 are all the claims pending in the application.

I. Claim Rejections under 35 U.S.C. § 102

The Examiner has rejected claims 55-68 under 35 U.S.C. § 102(b) as being anticipated by Watson (U.S. 5,765,923).

Claim 55, as amended, recites the features of a first pressure wave deforming means to promote localized cracking or fracture of a rock surface adjacent to the first pressure wave deforming means; and a second pressure wave deforming means to promote localized cracking or fracture of a rock surface adjacent to the second pressure wave deforming means. Applicant respectfully submits that Watson does not disclose or suggest such a combination of features.

Regarding Watson, Applicant notes that this reference discloses a cartridge 25 that is used for fracturing rock (see Fig. 3). The cartridge 25 is provided with a base 24, a separation disk 29, and a front end 27 (see Fig. 3; col. 9, lines 19-21; and col. 9, lines 35-38).

As shown in Fig. 3 of Watson, the separation disc 29 holds a main propellant load 30 separate from the internal air space 31 contained in the front end 27 of the cartridge, and is designed to rupture or disintegrate when the propellant load 30 is burned so that the cartridge front end 27 is exposed to the high pressure gases (see col. 9, lines 40-42 and col. 9, lines 65-67).

As explained in Watson, after the separation disk 29 ruptures or disintegrates, thereby exposing the cartridge front end 27 to the high pressure gases, rupture grooves 32 that are

provided in the cartridge front end 27 facilitate the rupture of the cartridge front end 27 (see col. 10, lines 21-24).

Regarding the rupturing of the cartridge 25 of Watson, Applicant notes that the cartridge 25 is designed to rupture only at the front end 27 (see col. 10, lines 21-27). In this regard, Applicant notes that Watson explicitly discloses at col. 10, lines 24-27, that the rupture grooves 32 "ensure that the cartridge ruptures at the front end and not elsewhere along the cartridge body such as the location near where the cartridge body 25 enters the cartridge base 24" (emphasis added).

In the Office Action, the Examiner has taken the position that the recitation in the claims of the cracking or fracture of the rock surface taking place "in a locality of" the first and second pressure wave deforming means was overly broad (see Office Action at page 6).

Accordingly, in order to more clearly define the claimed invention, and in particular, the location of the cracking or fracture of the rock surface with respect to the first and second pressure wave deforming means, claim 55 has been amended herein to recite that the first pressure wave deforming means promotes localized cracking or fracture of a rock surface adjacent to the first pressure wave deforming means, and that the second pressure wave deforming means promotes localized cracking or fracture of a rock surface adjacent to the second pressure wave deforming means.

With respect to these features, Applicant notes that in the Office Action, the Examiner has taken the position that the separation disk 29 of Watson corresponds to the "first pressure wave deforming means" and that the cartridge base 24 of Watson corresponds to the "second pressure wave deforming means".

First, regarding the separation disk 29 of Watson, Applicant submits that while this element is used to separate the propellant 30 from the front end 27 of the cartridge, that localized cracking or fracture of the rock surface does not occur adjacent to the separation disk 29. Instead, as explained above, the separation disk merely disintegrates when the propellant is burned and allows the propellant to enter the front end of the cartridge, whereby the front end of the cartridge ruptures (see col. 9, lines 65-37 and col. 10, lines 21-27).

Second, regarding the cartridge base 24 (which the Examiner indicated corresponds to the "second pressure wave deforming means"), as noted above, Watson explicitly discloses that the cartridge does not rupture near the cartridge base 24, but instead, ruptures only at the front end 27 of the cartridge (see col. 10, lines 21-27). As such, Applicant respectfully submits that, in Watson, cracking or fracture of a rock surface clearly does not take place adjacent to the cartridge base 24.

In view of the foregoing, Applicant respectfully submits that Watson does not disclose, suggest or otherwise render obvious at least the above-noted combination of features recited in amended claim 55 of a first pressure wave deforming means to promote localized cracking or fracture of a rock surface adjacent to the first pressure wave deforming means; and a second pressure wave deforming means to promote localized cracking or fracture of a rock surface adjacent to the second pressure wave deforming means. Accordingly, Applicant submits that claim 55 is patentable over Watson, an indication of which is kindly requested.

Claims 56-63, 67 and 68 depend from claim 55 and are therefore considered patentable at least by virtue of their dependency.

In addition, regarding claim 60, Applicant notes that this claim recites that the member that is made from a material which has a density greater than the density of the propellant is turned into a high pressure jet by action of the propellant when it is ignited. Regarding the "member" as recited in claim 60, Applicant notes that this member is part of the second pressure wave deforming means (see claim 59, from which claim 60 depends).

In the Office Action, the Examiner has taken the position that the separation disk 29 of Watson corresponds to the "member" as recited in claim 60 (see page 3 of the Office Action). Applicant notes, however, that the Examiner has taken the position in the Office Action that the separation disk 29 of Watson corresponds to the first pressure wave deforming means, not the second pressure wave deforming means (see page 2 of the Office Action).

Thus, because the Examiner has indicated in the Office Action that the separation disk 29 of Watson corresponds to the first pressure wave deforming means, Applicant submits that the Examiner's reliance on the separation disk 29 of Watson as corresponding to the "member" of claim 60 is incorrect because the "member" of claim 60 is part of the second pressure wave deforming means (see claim 59), not the first pressure wave deforming means.

In view of the foregoing, Applicant respectfully submits that claim 60 is patentable over Watson, an indication of which is kindly requested.

Regarding claim 61, Applicant notes that this claim recites that an explosive, which acts directly on the member that is made from a material which has a density greater than the density of the propellant, is used to generate a high pressure jet of the material. Similar to the discussion above with respect to claim 60, Applicant notes that the "member" of claim 61 is

part of the second pressure wave deforming means (see claim 59, from which claim 61 depends).

In the Office Action, the Examiner has again taken the position that the separation disk 29 corresponds to the "member" as recited in claim 61. For at least the same reasons as discussed above with respect to claim 60, Applicant submits that the separation disk 29 of Watson cannot correspond to the "member" of claim 61.

In view of the foregoing, Applicant respectfully submits that claim 61 is patentable over Watson, an indication of which is kindly requested.

Regarding claim 64, Applicant notes that this claim has been amended to recite the features of a first pressure wave deforming means to promote localized cracking or fracture of a rock surface adjacent to the first pressure wave deforming means; and a second pressure wave deforming means to promote localized cracking or fracture of a rock surface adjacent to the second pressure wave deforming means.

As noted above, the Examiner has taken the position that the separation disk 29 of Watson corresponds to the "first pressure wave deforming means" and that the cartridge base 24 of Watson corresponds to the "second pressure wave deforming means".

As discussed above, however, the separation disk 29 of Watson merely ruptures or disintegrates when the propellant is burned, and the cartridge 25 of Watson is designed to rupture only at the front end 27 (see col. 10, lines 21-27).

As such, Applicant respectfully submits that Watson does not disclose, suggest or otherwise render obvious at least the above-noted combination of features recited in claim 64 of a first pressure wave deforming means to promote localized cracking or fracture of a rock

surface adjacent to the first pressure wave deforming means; and a second pressure wave deforming means to promote localized cracking or fracture of a rock surface adjacent to the second pressure wave deforming means.

In view of the foregoing, Applicant respectfully submits that claim 64 is patentable over Watson, an indication of which is kindly requested. Claims 65 and 66 depend from claim 64, and are therefore considered patentable at least by virtue of their dependency.

In addition, regarding claim 65, Applicant notes that this claim has been amended to recite that the first cartridge and the second cartridge are disposed such that the top portion of the first cartridge opposes the base of the second cartridge. Regarding this feature, Applicant notes that in the Office Action, the Examiner has taken the position that the cartridge 25 of Watson corresponds to the "first cartridge" of claim 65, and that the igniter tube 34 of Watson corresponds to the "second cartridge" of claim 65.

As shown in Fig. 3 of Watson, however, the top portion of the cartridge 25 clearly does not oppose the base of the igniter tube 34. As such, Applicant respectfully submits Watson does not disclose, suggest or otherwise render obvious the above-noted feature of the first cartridge and the second cartridge being disposed such that the top portion of the first cartridge opposes the base of the second cartridge. Accordingly, Applicant submits that claim 65 is patentable over Watson, an indication of which is kindly requested.

Further, regarding claim 66, Applicant notes that this claim has been amended to recite that the stemming material is disposed outside of both of the first cartridge and the second cartridge. With respect to this feature, as noted above, the Examiner has taken the position that the cartridge 25 of Watson corresponds to the "first cartridge", and that the igniter tube 34

of Watson corresponds to the "second cartridge". In addition, the Examiner has taken the position that the propellant 30 of Watson corresponds to the "stemming material" of claim 66.

As shown in Fig. 3 of Watson, however, the propellant 30 is clearly disposed within the first cartridge 25. As such, Applicant respectfully submits that Watson does not disclose, suggest or otherwise render obvious the above-noted feature of the stemming material being disposed outside of both of the first cartridge and the second cartridge. Accordingly, Applicant respectfully submits that claim 66 is patentable over Watson, an indication of which is kindly requested.

II. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may best be resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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